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IN THE SPECIFICATION

Page 1, line 5 thereof, please amend the paragraph as follows:

This is a continuation -in-part application of Serial No. 08/974,351, filed 11/19/1997.

This invention relates to veterinary delivery devices for delivering medicaments, including pharmaceuticals or vaccines, to a plurality of poultry or other animals. In particular, this invention relates to a portable, electrically powered veterinary delivery system for reliably providing a precise amount of pharmaceuticals, or vaccine, rapidly to a plurality of fowl, porcine, ovine or other animals.

Page 1, line 23 thereof, please amend the paragraph as follows :

The present invention is directed to an automatic veterinary medicament delivery system that satisfies these needs for delivery of precise amounts of medicament to an individual animal or fowl. The medicament includes any fluid products for immunizing purposes or for treatment. The system provides rapid and consistent one-handed administration of the medicament, without fatigue-affected changes in the amount of medicament delivered, to large numbers of fowl, porcine, ovine, or other animals. An automatic veterinary medicament delivery system having features of the present invention comprises an electronic control unit having means for quickly adjusting the dosage of medicament to be delivered by injection. The veterinary delivery system includes several hand-held injection devices from which to choose, depending on desired use, each having a push-button trigger, at least one needle, a headlight, signal lights, optional dye marking means, and an optional mixing chamber for mixing medicaments at the time of delivery of the medicament, the hand-held injection devices being easily connected and disconnected by means of quick connect fluid couplers for being in fluid communication with the system and a nine-pin amp electrical connector for being in electronic communication with the control unit. One embodiment hand-held unit provides a single needle for injecting especially the ear of cattle. Another embodiment hand-held unit provides a single needle plus marking means. [A third] An additional hand-held unit provides two needles for

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injecting two unmixed medicines simultaneously. [A fourth] One embodiment hand-held unit provides a single needle, but the hand-held unit is inverted with a pistol grip attached for use especially with thick-skinned animals, such as cattle or pigs. All of these hand-held units provide means to deter self-injection of the user. In some hand-held units, this safety device is in the form of an emergency stop button. In [the fourth] an additional hand-held unit, a safety interlock is provided that prevents injection until a retractable resilient member is forced to a second, retracted position, to complete an electrical circuit permitting injection to take place. In all of these delivery systems, a source of fluid medicament, tubing interconnecting the injection device and the medicament, an electrically powered pump in fluid communication with both the injection device and the medicament, actuation means for activating a pump forcing the medicament through the tubing from medicament source to the injection device for dispensing, are provided. A quick connect fluid coupler permits coupling of each hand-held unit to the pump. A nine-pin amp electrical connector connects the electrical power portion of each hand-held unit to the control unit. Also, a convenient carrying system is provided. Optional means for marking injected animals are also included. Methods for administering two medicaments simultaneously are also provided.

Page 3, line 7 thereof, please amend the paragraph as follows:

Manually depressing a trigger on the hand-held injection device of this delivery system, in conjunction with inserting a needle into the subject body, actuates the pump causing fluid to flow through the hollow needle accomplishing an injection. An emergency stop button is provided in case an error is made, ex. the needle goes through the ear, or through the ear and into the user's hand to prevent injection of a medicament into the user. This is an important deterrent to self-injection. An additional embodiment provides a safety interlock member which must be depressed to the needle hub to close the electrical switch which in turn actuates the pump causing fluid flow through the hollow needle only when the needle is fully [injected] inserted actuates an injection. This safety interlock is adjacent to the needle and positioned to extend to the length of the needle. This safety interlock is then depressed to the point adjacent to the needle hub as the needle is inserted. At this

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junction, an internal extended rod from the safety interlock closes the electrical circuit by means of a Hall-effect switch. This, in turn, actuates the pump to cause fluid flow through the needle. This feature also deters accidental self-injection. Injection cannot take place until the needle is fully inserted, thus enabling the operator to withdraw an accidental stab prior to injection taking place. The goal of both of the systems is operator safety. Self-injection is a very serious accident among vaccinating crews.

Page 4, line 27 thereof, please amend the paragraph as follows:

Fig. 2 is a perspective view of [the first] an embodiment hand-held unit of the medicament delivery system of Fig. 1;

Page 4, line 3 thereof, please amend the paragraph as follows:

Fig. 4 is a side perspective view of [a second] an additional embodiment hand-held unit of the medicament delivery system of Fig.1;

Fig. 5 is an end view of [a third] an alternate embodiment pistol grip hand-held unit;

Page 4, line 8 thereof, please amend the paragraph as follows:

Fig. 8 is a plan view of [the second] an alternate embodiment hand-held unit where two medicaments are pumped through two pumps simultaneously at the same rate;

Fig. 9 is a plan view of [the second] an alternate embodiment hand-held unit where two medicaments are pumped through two separate control units at differing rates;

Page 4, line 13 thereof, please amend the paragraph as follows:

Fig. 11 is a side view of [the third] an alternate embodiment pistol grip hand-held unit;

Fig. 12 is a plan view of [the fourth] an alternate embodiment hand-held unit where one medicament is injected and a dye pad applicator is present; and

Fig. 13 is a side view of [the fifth] an additional embodiment, pivoting hand-held unit, with

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certain portions shown in cross-section.

Page 5, line 26 thereof, please amend the paragraph as follows:

Turning now to the drawings, in which like reference characters refer to corresponding elements throughout the several views, Fig. 1 illustrates an electrically powered automatic veterinary medicament delivery system, shown generally at 20. System 20 is housed in a container such as a back pack and includes a hand-held unit 40 in fluid communication, by means of conduit tubing 78, with a medicament container 70. A first embodiment hand-held unit 40, has a single needle 56, no dye means, is especially for use in injection of a medicament into the ear of a bovine. All of the hand-held units 40 have a generally cylindrical shape with a flattened surface 41 on which, in embodiments [one through three,] are mounted both a trigger 42 and an emergency stop 44 button. [The fourth] An additional embodiment also has a trigger but no emergency stop. Also shown are a green LCD 48, which lights to indicate an injection is in progress, and a red LCD 50 which lights to indicate that the medicament level is low. The "function" key pad 108 is touched on the control unit 110 to set the anticipated number of total count so that the low medicament bottle LCD lights up at the appropriate time, ex. when 90% of the doses have been given. Head lamp 46 is used to illuminate the area of injection, as well as an optional dye pad 172 along with the needle mount 58, in actual use, a Luer lock, all mounted on a proximal surface 22 of the hand-held unit 40". Entering this distal end 24 of hand-held unit 40" is tubing 82 containing medicament 84, dye 86 and electrical power cords 88. All of the various hand-held unit embodiments 40, 40', 40", & 40"' look and work similarly. A pump 100, which sits atop a control unit 110, sucks up the medicament from within medicament container 70 through tubing 80 and forces the fluid medicament from pump 100 exiting through tubing 82 and continuing through conduit tubing 78 for delivery by the hand-held unit 40 through a hollow needle 56. The control unit 110 utilizes an electronic dosage control 130, shown in detail in Fig. 7, to deliver a predetermined precise amount of medicament upon injection. Additionally, the electronic dosage control 130 provides means of changing the dosage

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of these predetermined precise amounts of medicament. Control unit 110 also provides optional marking means. Marking dye, in an optional embodiment shown at Figs. 2,3,& 5, is delivered through dye means, such as by an applicator pad 172, simultaneously with injection of the medicament, marking the individual poultry, porcine, ovine or other animal injected. Control unit 110 function key pad 108 has an on/off control of dye means. Control unit 110 also provides for counting the number of injections made.

Page 8, line 24 thereof, please amend the paragraph as follows:

Fig. 4 is a side perspective view of [a third] an alternate embodiment hand-held unit 40" of the medicament delivery system of Fig.1. This embodiment has the same general shape as the first embodiment, namely hand-held unit 40" having a generally cylindrical shaped body with a flattened dorsal surface 41 on which are mounted both a trigger 42 and an emergency stop 44 button.

This embodiment adds a second needle 56' and needle mount 58' Luer lock to the proximal surface of the hand-held unit 40". Although the optional dye applicator pad is not shown, it will be understood that this dye applicator pad is an option on all of the hand-held units. Also not shown in this view but understood to be mounted on the hand-held unit 40" is an additional light indicating that an injection is in progress similarly to light 52 in Fig. 3. Two needles 56, 56' are needed with this embodiment because two medicaments that may not be mixed are being injected, as indicated by the two medicament tubings 82, 82'. Quick connect fluid [coupleres] couplers 196 are mounted on the terminal ends of both medicament tubings 82, 82' and dye tubing 86, 86' to permit quick, convenient fluid connection of this hand-held unit 40" to control unit 110. If the dosage is the same for both medicaments, a second pump 100' can be mounted atop the first pump 100, as shown in Fig. 8, connected to a hand-held unit 40". The two pumps, 100, 100' piggy backed atop the other, are interconnected by an drive shaft 134 whereby the pumps turn at the same rate of speed delivering identical amounts of medicament. If, however, different dosages of the two medicaments is needed, due to differences in viscosity or potency, or the like, two control units, 110, 110' would be needed, as shown in Fig. 9. The tubing from both units would be combined so only

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one hand-held unit 40" is needed. Although only one processing of the subject animal occurs, two injections of different un-mixed medicaments are given simultaneously to the same subject animal.

Page 10, line 12 thereof, please amend the paragraph as follows:

Trigger 42 is in electrical communication with pump 100. In [the fourth] an alternate embodiment of hand-held injection device 40"" trigger 42 must be depressed, and the needle 56 must be fully inserted, to complete the electrical circuit in the Hall effect switch which actuates the pump 100 and results in an injection. This hand-held injection device 40"" has a safety interlock 152. The other embodiments, 40, 40' & 40" have an emergency stop button 44, although a safety interlock 152 could be used on all embodiments. At this time, a safety interlock is not deemed necessary on hand-held injection device 40 because it is primarily used on the ears of cattle where the needle is parallel to the ear. A safety interlock would not have any animal body part to urge the interlock to it's second, retracted, position. Also at this time, a safety interlock is not deemed necessary on hand-held injection device 40' because this embodiment is primarily used on soft-tissued animals such as poultry where again the safety interlock would not have a substantial body part to urge the interlock to it's second, retracted, position. A dye source is indicated at 60 with its associated tubing 86 which interconnects, again by a quick connect fluid coupler, to conduit tubing 78 that is in fluid communication with hand-held injection device 40"".

Fig. 6 is an external illustration of the control unit 110 of the medicament delivery system 20 of this invention with pump 100 mounted on top. In all embodiments, control unit provides electrical power to hand held units 40 as well as electronic information[is] as set in electronic control to control dosage, dye on/off, and amount, injection count and low medicament level as well as the automatic reverse feature following each injection. A nine-pin amp electrical connector 94 connects the electronic control unit 110 to any of the hand-held injection devices 40. A four-pin amp electrical connector 122 connects the electronic control unit 110 to the dye pump. Another four-pin amp connector 124 connects the control unit 110 to the battery 126. These different amp electrical

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connectors protect against accidental connection of the wrong device to the outlet at the control unit 110. Display 112 is an LCD display which lights up to illustrate the different modes of the control unit 110, namely, the amount of the selected dosage, the amount of dye used per subject animal, and the count of injections made. The dosage, which is controlled by setting the number of pulses that are emitted by the electronic photo optic sensor 138 to accurately inject the desired dose, depends on the viscosity and temperature of the medicament and must be calculated at each injection session. For example, very low viscosity liquid, such as water, requires 44 pulses per 1.0 milliliter (ml) while on the other hand, dosages of high-viscosity vaccines could require as many as 110 pulses per 1.0 milliliter (ml). The number of pulses in an injection is manually controlled by the up and down arrows 106 on the face of control unit 110, can be set at each injection session. Whether or not to use dye and the amount of dye used can also be selected by control unit 110. The amount of dye to be used can be set in 0.1 second increments. The injection count can be re-set to zero after each injection session by means of the up and down arrows 106. Switches on the face of control unit 110 include an on-off power switch 114, pump switch 116 that controls forward or reverse pump, and light switch 120 which controls power to the head lamp 46.

Page 13, line 3 thereof, please amend the paragraph as follows:

Fig. 8 illustrates [the third] an alternate embodiment hand-held injection device 40" used to simultaneously inject two medicaments of similar viscosities. Because these two medicaments may not be mixed, for whatever reason, they are run through separate pumps, 100 and 100' which are interconnected by an extension of drive shaft 134, shown in detail in Fig. 7. Tubing 82 & 82' carries the pumped medicaments separately to hand-held injection device 40" for simultaneous injection. Fig. 9 illustrates the third embodiment hand-held injection device 40" in the case of desiring to simultaneously inject two medicaments of different viscosities. Again, these two medicaments are not be to mixed, for whatever reason, and are run through two separate control units, 110 & 110' before being run through tubing 78 & 78' into hand-held injection device 40".